

# Use of Wireless Communication by Handheld Pen-Based Computers To Cut Medical Costs and Improve Health Care

Ali Malek, M.D., Nicholas Coblio, B.S., Michael McCormick, M.S., and  
Willard S. Harris, M.D.

James A. Haley Veterans' Hospital, Tampa, Florida 33612

Slow and difficult communication between health care workers in Veterans Health Administration (VA) and nonVA Hospitals wastes enormous money and time and leads to inappropriate care. Three repetitive and frequent processes that exemplify this are as follows. 1) Because the VA pharmacist's verification (and sometimes rectification) of drug orders by resident physicians must often be preceded by personal dialogue with the physician, so as to clear up vagueness, ambiguities, or errors in the original orders, this essential approval by the pharmacist (and, therefore, drug administration itself) is often delayed, e.g., by "telephone tag," for many minutes to hours, which may be costly and dangerous. 2) Like many managed care organizations, the VA is increasing the number of its outpatient primary care physicians (PCPs) and patients, but not its subspecialist physicians. Over-referral to subspecialty clinics by PCPs--e.g., perhaps to lessen either their own time with the patient or their medical uncertainty or to compensate for lacking either specialized knowledge or immediate access to it--results in several undesirable excesses, viz., in the number of clinic visits, use of subspecialists' time, waiting times for subspecialty clinics, and costs and often in frustration and dissatisfaction felt by both the subspecialist and the patient. 3) Resident physicians and PCPs, at the bedside or in their offices, often have discrete but vexing clinical questions readily answerable by a distant subspecialist but not grave enough to invite an order for either a formal inpatient consultation or a subspecialty clinic appointment. Rapid, easily accomplished, targeted, and educational dialogue with the subspecialist, quickly enterable as a recorded document into the patient's electronic or paper medical record, would be welcomed by both the querying and subspecialist physicians and would often improve patient care.

The aim of the present study is to determine if quick, mobile, and documented wireless communication by means of handheld pen-based computers, or personal digital assistants (PDAs)<sup>1</sup>, could help to alleviate such problems. We are using PDAs (Newton MessagePad 130s, which we have equipped with wireless PCMCIA communication cards), carried throughout the day by resident physicians, a pharmacist, and subspecialist attending physicians (at present the Chiefs of Infectious Diseases, Gastroenterology, Neurology, and Medicine, who is a Cardiologist), in conjunction with the concomitant use of desktop personal computers by other physician and pharmacist participants, to provide instant e-mail consultative dialogue between, on the one hand, the residents or the PCPs and, on the other, the pharmacists or the subspecialists. The enthusiasm of all the communicating PDA users and of their e-mail correspondents who use desktop computers is high and spreading.

## References

1. Labkoff SE, Shah S, Bormel J, Lee YJ, Greenes RA. The Constellation Project: experience and evaluation of personal digital assistants in the clinical environment. *Proc Annu Symp Comput Appl Med Care*. 1995;678-682.